TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 960PWE154

to be issued to:

Public Service Company - Ft. Lupton Combustion Turbines
Weld County
Source ID 1230014

Prepared on October 3, 1996 Revised November 19, 1996, January 16, 1997 and March 26, 1997 Jacqueline Joyce, Review Engineer

I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in this report are based on information provided in the original application submittal of February 23, 1996, comments on the Technical Review Document and draft Operating Permit submitted January 14, 1997, a March 25, 1997 meeting and telephone conversations with the source.

II. Source Description:

This source is classified as an electric services facility under Standard Industrial Classification 4911. This facility is an unmanned electric power generating station that consists of 2 simple cycle combustion turbines that can generate up to 100 megawatts of power. Fuel used in the turbines is either natural gas, Nos. 1 and/or 2 fuel oil, or combination. This facility is located east (approx. 2 miles) of Ft. Lupton in Weld County. Ft. Lupton is a community with a population of approximately 5,200 people. This facility is located in an attainment area for all criteria pollutants and there are no affected states within 50 miles. Rocky Mountain National Park, a Federal Class I designated area, is within 100 km of this facility. With respect to Prevention of Significant Deterioration (PSD) requirements, this facility is considered a major source but has not triggered PSD review, with emissions as follows:

<u>Pollutant</u>	Potential to Emit (tpy) F (100% Natural Gas)	Potential to Emit (tpy) Actuals (tpy) (100% #s 1 and/or 2 Fuel Oil)	(Combination)
PM	244	350	4.9
PM_{10}	244	350	4.9
SO ₂	54	2,902	2.7
NO _x	2,554	4,012	51.8
VOĈ	140	98	2.7
CO	638	276	12.2

The potential to emit is based on information supplied in the Title V application for

regulated units. Actual emissions are based on the Air Pollution Emission Notices (APEN) submitted on February 23, 1996 with the Title V permit application. The source indicated that 112(r) Accidental Release Requirements are not applicable at this facility. These simple cycle combustion turbines are simple combustion turbines that commenced operation before November 15, 1990 and are therefore not affected units subject to the Acid Rain Program (§72.6(b)(1)).

III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

- A. Units T001 and T002: General Electric, Simple Cycle Combustion Turbines, rated at 662 mmBtu/hr, Models MS7000B and MS7000C, Serial Nos. 217708 and 217709. Fired with Natural Gas, Nos. 1 and/or 2 Fuel Oil or Combination.
 - **1. Applicable Requirements -** These units were issued (April 1974) construction permit C-10,405 to modify the turbines for burning No. 2 fuel oil. Upon inspection of the modified units a "permit to operate" was issued. The "permit to operate", P-10,779 included requirements for opacity (20%), particulates (0.1 lb/mmBtu), and SO_2 (500 ppm). The "permit to operate" was issued under Regulation 3 (as adopted December 9, 1971 and effective February 1, 1972) which required that "permits to operate" be renewed every 2 years. This permit, P-10,779 was issued 3/19/75 and had an expiration date of April 1, 1977.

Although this permit has an expiration date the terms of the permit are still in effect per §25-7-114.(k) C.R.S which states that "any permit issued prior to June 20, 1979, with respect to a project or the operation thereof shall continue in full force and effect ..."

As specified in permit P-10,779, the applicable requirements that apply to these units are:

- 20% Opacity limit
- 0.1 lbs/mmBtu Particulates
- 500 ppm SO₂

This source also has these additional specific applicable requirements:

- 30% Opacity limit during fire-building, cleaning of fire boxes, soot blowing, start-up, process modifications or adjustment of control equipment, when burning Nos. 1 and/or 2 fuel oil (Regulation 1, Section II.A.4)
- 0.8 lbs/mmBtu SO₂ limit (Regulation 1, Section VI.A.3.c.(ii))
- APEN reporting (Regulation 3, Part A Section II)

Since the source has two applicable requirements regarding SO_2 limits, in the interest in streamlining the draft Operating Permit the Division will only include the Regulation 1 SO_2 requirement of 0.8 lbs/mmBtu as this is the more conservative requirement.

2. Emission Factors - Emissions from simple cycle combustion turbines are dependent on the fuels being burned. Typically natural gas and Nos. 1 and/or 2 fuel oil are the primary fuels used. The pollutants of concern are Particulate Matter (PM and PM₁₀),

Nitrogen Oxides (NO_x), Sulfur Dioxide (SO₂), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC). Approval of emission factors for these units is necessary to the extent that acceptably accurate actual emissions are required to verify the need to submit revised APENs to update the Division's Emission Inventory and for annual fee purposes. The source proposed to use emission factors from EPA's Compilation of Emission Factors (AP-42) dated January 1995, Section 3.1, Table 3.1-2. The emission factors are as follows:

Pollutant	Emission Factor (Natural Gas)	Emission Factor (Nos. 1 and/or 2 Fuel Oil)
PM	0.042 lbs/mmBtu	0.061 lbs/mmBtu
PM_{10}	0.042 lbs/mmBtu	0.061 lbs/mmBtu
SO ₂	0.94S lbs/mmBtu	1.01S lbs/mmBtu
NOx	0.440 lbs/mmBtu	0.698 lbs/mmBtu
COÎ	0.110 lbs/mmBtu	0.048 lbs/mmBtu
VOC	0.024 lbs/mmBtu	0.017 lbs/mmBtu

The "S" identified in the emission factor for SO₂ emissions indicates weight percent sulfur in the fuel.

3. Monitoring Plan - Conditions 1.1 through 1.5 identify the monitoring requirements proposed to demonstrate compliance with permit conditions when the turbines are burning natural gas. The source indicated that burning of pipeline quality natural gas was sufficient for demonstrating compliance with both the opacity and particulate requirements and the Division agrees. Although the emission factor for SO_2 emissions is dependent on the sulfur content of the fuel, the Division does not believe that the sulfur content of natural gas varies excessively nor is it expected that the sulfur content of the natural gas will exceed 1%, therefore the emission factor for SO_2 will always be less than the Regulation 1 SO_2 requirement. For this reason, the Division believes that burning of pipeline quality natural gas is sufficient to demonstrate compliance with the SO_2 requirement.

Conditions 2.1 through 2.6 identify the monitoring requirements proposed to demonstrate compliance with permit conditions when the turbines are burning Nos. 1 and/or 2 fuel oil. The source indicated that burning of Nos. 1 and/or 2 fuel oil was sufficient for demonstrating compliance with all applicable requirements. However, the Division believes that fuel sampling and EPA method 9 readings will be required to demonstrate compliance with the SO₂ and opacity requirements.

Conditions 3.1 through 3.6 identify the monitoring requirements proposed to demonstrate compliance with permit conditions when the turbines are burning a combination of natural gas and Nos. 1 and/or 2 fuel oil. When burning a combination of fuels the source must essentially demonstrate compliance per the monitoring plan identified for burning solely Nos. 1 and/or 2 fuel oil.

Following the Public Comment period for this Permit, the source and the Division met regarding recordkeeping issues identified by the source. The Ft. Lupton facility is an unmanned facility that is fenced and locked. The turbines are used during peak periods to generate electricity and are started up remotely. Therefore, the Division is allowing this facility to maintain records at Valmont Station, a coal-fired power plant operated by

the source and located at 1800 N. 63rd Street in Boulder. Records regarding alternative operating scenarios (Colorado Regulation 3, Part A, Section IV.A.1) are to be available to the Division upon request. Records of required monitoring and support information for the most recent twelve (12) month period and compliance certifications for the last five (5) years are to be made available to the Division upon request. All other records of required monitoring and support data shall be made available to the Division within 48 hours. Electronic records, as well as hard copies are acceptable to meet the recordkeeping and reporting requirements.

4. Compliance Status - Revised APENs were submitted with the Title V application. The source has demonstrated compliance with particulate and SO₂ limits identified in permit P10,779. The Division has determined that use of pipeline quality natural gas is sufficient to demonstrate compliance with opacity requirements. Past history has shown the opacity requirement has been met when No. 2 fuel oil was used. This unit is currently in compliance with all applicable requirements.

IV. Insignificant Activities

General categories of insignificant activities include: landscaping and housekeeping devices (\leq 10 hp), storage tanks less than 40,000 gal (lube oil, crude oil, and/or condensate), storage tanks with annual throughput less than 400,000 gal (Nos. 1 and/or 2 fuel oil), fuel burning equipment (\leq 10 mmBtu/hr) for heat, and sources with emissions less than APEN de minimis. Specific insignificant activities identified in the Title V application are as follows:

Units with emissions less than APEN de minimis (Reg 3 Part C.II.E.3.a)

Natural gas venting and equipment leaks (VOC emissions < 1 ton/yr)
Use of cleaners and solvents in equipment maintenance (VOC emissions < 1 ton/yr)
Fugitive emissions from roads (PM emissions < 1 ton/yr)

Fuel burning equipment less than 10 mmBtu/hr - for heating (Reg 3 Part C.II.E.3.ggg)

Office space heater

Storage tanks with annual throughput less than 400,000 gal (Reg 3 Part C.II.E.3.fff)

Emergency fuel oil spill/overfill tank (10,000 gal underground) Fuel oil unloading tank (20,000 gal underground)

Fuel oil storage tank (2,800,000 gal aboveground)

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Not an emission source and/or not a source of regulated/reportable emissions

Two (2) condensate storage tanks (280 gal underground) Water tank (approx. 20,000 gal aboveground)

Turbine lube oil vents

V. Alternate Operating Scenario

The primary fuel used in the turbines is natural gas. However, the source requested that

they be permitted to use either natural gas, Nos. 1 and/or 2 fuel oil, or combination. The Nos. 1 and/or 2 fuel oil are typically only used as back-up to natural gas and there may be occasions when natural gas and Nos. 1 and/or 2 fuel oil are used in combination.

VI. Permit Shield

The source identified and justified a short list of nonapplicable requirements that they wish to be specifically shielded from. The nonapplicable requirements that the source will be shielded from are as follows:

- A. Colorado Regulation 7 (except for Section V, Paragraphs VI.B.1 and 2, and Subsection VII.C) The permit application states that these requirements are not applicable to the facility as the facility is not located in an ozone nonattainment area. Regulation 7 only applies to sources located in ozone nonattainment areas or in the Denver Metro Attainment Maintenance Area with the exception of Section V, Paragraphs VI.B.1 and 2, and Subsection VII.C which are applicable statewide. The permit shield was granted based on the source's justification.
- B. Colorado Regulation 7, Subsection V.B The source's justification in the permit application did not cover this subsection, however, this requirement is not applicable as the source does not store or dispense gasoline.
- C. Colorado Regulation 7, Paragraphs VI.B.1 and 2 The source's justification in the permit application did not cover these paragraphs, however, this requirement is not applicable as the source stores Nos. 1 and/or 2 fuel oil and is exempt (per VI.B.1.a.(ii)) from these requirements.
- D. Colorado Regulation 7, Subsection VII.C The source's justification in the permit application did not cover this subsection, however, this requirement is not applicable as the source does not store crude oil.
- E. 40 CFR Part 60, Subpart GG (as adopted by reference in Colorado Regulation 6) The permit application states that NSPS GG is not applicable as the turbines have not been modified after October 3, 1977. The permit shield was granted based on the source's justification.
- F. Prevention of Significant Deterioration requirements 40 CFR 52.21 (Colorado Regulation 3, Part B, Section IV.D.3) The permit application states that this requirement does not apply as no modifications have occurred to the facility after August 7, 1977. This source is considered to be a major source in an attainment area (Potential to Emit > 250 tons/year) and is considered major for purposes of Prevention of Significant Deterioration (PSD) regulations. Modifications up to this point in time have not triggered significance levels which would bring about PSD review. Future modifications to this facility which are in excess of significance levels as defined in Colorado Regulation No. 3, Part A, Section I.B.58 will result in the application of the PSD review requirements. The permit shield was granted based on the source's justification and certification of the responsible official.